

ANDREW CHU

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EDUCATION

University of Waterloo

Bachelor of Computer Science - Dean's Honours List

Apr. 2028

Waterloo, ON

EXPERIENCE

Software Engineer

May 2025 - Aug. 2025

CGI | *LangChain, Docker, PostgreSQL, Python, Java, WebLogic, FastAPI, Ansible, Qdrant*

Markham, ON

- Developed enterprise RAG chatbot to speed up information retrieval from 500+ internal production guides, reducing team incident response time
- Engineered unified dashboard for remotely executing jobs on **400+** applications and servers, automating health checks, server restarts, and email notification
- Increased chat response accuracy by **38%** through fine-tuning a large language model with QLoRA

Data Engineer Intern

Aug. 2024 - Sep. 2024

Alljoined | *Python, NumPy, Pandas*

Toronto, ON

- Debugged critical timing issue in **EEG data preprocessing** by implementing data logging system in **Python**
- Improved data collection script performance by **20x** by refactoring **WebSocket** script to prevent deadlocking when communicating between EEG headset and computer
- Designed data processing pipeline for denoising and artifact correction using **NumPy, Pandas**, and **scikit-learn**

Full-Stack Developer

Sep. 2022 - Jan. 2023

Digitera Interactive | *Flutter, Firebase, Dart*

Ottawa, ON

- Led development of "Skule News" project, a **mobile school news app** to streamline student communication
- Integrated **Firebase** for authentication, real-time updates, and cloud file storage for secure backend support
- Reduced frequency of in-app crashes by **20%** by resolving **6+** bugs resulting from incorrect **Firebase** queries

PROJECTS

UW Data Science Club Website - User Check-In and Application Portal | *Next, Express, MongoDB, Redux, TailwindCSS*

- Developed the University of Waterloo's Data Science Club website as the technical lead for **1000+** registered users
- Resolved **15+** development tickets spanning frontend UI enhancements, application submission workflows, and backend database migration
- Implemented email confirmation for password resets and form submission, improving user experience and security

Villio AI - City Services App | *Azure, LangChain, Python, FastAPI, Cosmos DB, Firebase Auth, OpenAI, PyTest, Docker*

- Architected **FastAPI** backend for multi-tenant city services app, integrating Firebase Auth for user authentication
- Engineered agentic pipeline using **LangChain** for filling out forms through a chat interface for ease of use
- Deployed backend securely through Azure App Service, enabling high availability across multiple cities

EasyMeet - Meetup Scheduling Website | *React, Firebase, Mocha, GitHub, CI/CD, Figma, YAML*

- Developed and deployed a mobile-first, passwordless meetup scheduling website using React for **100+ users**
- Designed and tested **NoSQL Cloud Firestore** to protect user data from illegitimate database read and writes
- Automated **CI/CD** unit testing and deployment with build caching using **Mocha, Chai** and **GitHub Actions**

Tinyraytracer - Computer Graphics Renderer | *C++, Go*

- Developed a fast and simple raytracer written in **Go** and **C++** for **multithreaded** CPU-based 3D rendering
- Accelerated I/O image write operations **8x** by leveraging Goroutines to write **concurrent**, performant code
- Implemented effects including specular lighting, reflection, and refraction using the Phong reflection model

TECHNICAL SKILLS

Languages: TypeScript, Python, C/C++, Java, Go, C#, CSS, HTML, PowerShell, Bash

Databases: MongoDB, MySQL, Firebase, Supabase, PostgreSQL, Qdrant, Cosmos DB

Frameworks: Next.js, React, Express, Flask, FastAPI, Jest, SvelteKit, Electron, n8n, LangChain, nginx

Developer Tools: Azure, WebLogic, Linux, Git, Figma, Docker, Postman, Vercel, Node, Google Cloud Platform